

RAFI™ Fundamental High Liquidity Index Series Attribution Summary: Q4 2024

Performance

Performance Analysis	QTD Return	QTD Excess Return	1-Year Return
RAFI Fundamental High Liquidity US Large Index	-0.59%	-3.40%	16.74%
<i>Solactive GBS United States Large & Mid Cap Index</i>	2.82%	---	25.34%
RAFI Fundamental High Liquidity US Small Index	0.21%	-1.15%	9.52%
<i>Solactive GBS United States Small Cap Index</i>	1.36%	---	15.02%
RAFI Fundamental High Liquidity Developed ex US Large Index	-7.94%	-0.66%	3.43%
<i>Solactive GBS Developed Markets ex US Large & Mid Cap Index</i>	-7.28%	---	5.33%
RAFI Fundamental High Liquidity Developed ex US Small Index	-8.04%	0.19%	2.27%
<i>Solactive GBS Developed Markets ex United States Small Cap Index</i>	-8.23%	---	2.34%
RAFI Fundamental High Liquidity Emerging Markets Index	-6.76%	0.90%	13.66%
<i>Solactive GBS Emerging Markets Large & Mid Cap Index</i>	-7.66%	---	7.93%
RAFI Fundamental High Liquidity US All Index	-0.53%	-3.17%	16.16%
<i>Solactive GBS United States All Cap Index</i>	2.64%	---	23.91%
RAFI Fundamental High Liquidity Global Real Estate Index	-9.93%	-1.25%	3.63%
<i>iShares Global REIT ETF</i>	-8.68%	---	2.65%

RAFI Fundamental High Liquidity failed to keep up with growth-driven returns across the quarter and the year in developed markets. Conversely, relative returns were strong in emerging markets during the quarter and for the full year. (A country mismatch also helped in emerging markets and hurt in developed international markets as Korea is the RAFI international developed indices, a carryover from the prior methodology, while Korea was in the emerging markets benchmark.)

United States Large

Sector Attribution

9/30/2024 to 12/31/2024	RAFI Fundamental High Liquidity US Large Index		Solactive GBS United States Large & Mid Cap Index		Attribution Analysis		
	Port. Average Weight	Port. Total Return	Bench. Average Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	-0.58	100.00	2.77	-1.11	-2.23	-3.34
Basic Materials	3.82	-12.56	2.02	-12.36	-0.29	-0.00	-0.29
Communications	10.17	3.01	10.03	8.63	0.01	-0.56	-0.55
Consumer Cyclical	9.45	1.67	10.95	13.26	-0.14	-1.05	-1.19
Consumer Non-Cyclical	8.09	-1.49	5.62	-3.24	-0.14	0.15	0.01
Energy	6.85	-2.97	3.30	-2.66	-0.18	-0.02	-0.20
Financials	18.21	8.49	11.09	7.18	0.28	0.23	0.50
Healthcare	10.79	-12.23	10.80	-10.43	0.02	-0.22	-0.20
Industrial	9.39	-2.71	7.69	-1.52	-0.07	-0.12	-0.19
Real Estate	1.95	-6.72	2.07	-8.37	0.01	0.04	0.05
Technology	17.73	1.63	34.17	5.85	-0.50	-0.74	-1.24
Utilities	3.56	-4.35	2.26	-6.14	-0.12	0.07	-0.05

Strong performance from expensive growth companies in the technology, consumer cyclical and communications sectors hurt relative returns.

Top/Bottom Contributors

	Portfolio Weight	Active Weight	Q4 Return	Excess Return Contribution
Top Five Contributors to Return				
Eli Lilly and Company	0.21%	-1.21%	-12.71%	0.20%
Microsoft Corporation	2.46%	-3.85%	-1.85%	0.18%
Wells Fargo & Company	1.27%	0.80%	25.05%	0.15%
Advanced Micro Devices, Inc.	0.10%	-0.37%	-26.38%	0.12%
General Motors Company	0.72%	0.60%	19.07%	0.08%
Bottom Five Contributors to Return				
Tesla, Inc.	0.29%	-1.51%	54.36%	-0.65%
NVIDIA Corporation	0.38%	-6.19%	10.59%	-0.45%
Amazon.com, Inc.	1.53%	-2.33%	17.74%	-0.33%
Broadcom Inc.	0.67%	-1.04%	34.74%	-0.31%
CVS Health Corporation	0.70%	0.56%	-27.79%	-0.19%

Specifically, Tesla and Amazon (Cyclicals), NVIDIA and Broadcom (Technology), Alphabet and Netflix (Communications) each cost 10bps or more.

Expensive firms were also the largest sources of positive relative returns as Eli Lilly, Microsoft, and AMD had weak quarters. Interestingly, Microsoft is simultaneously the second-largest absolute weight in the RAFI index and one of the largest underweights. This odd combination led to the portfolio's second-largest holding becoming its second-largest positive contributor because of a poor quarter.

United States Small

Sector Attribution

9/30/2024 to 12/31/2024	RAFI Fundamental High Liquidity US Small Index		Solactive GBS United States Small Cap Index		Attribution Analysis		
	Port. Average Weight	Port. Total Return	Bench. Average Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	0.19	100.00	1.59	0.04	-1.43	-1.39
Basic Materials	6.21	-8.15	7.15	-7.91	0.09	-0.02	0.07
Communications	4.35	3.44	3.40	14.32	0.10	-0.45	-0.34
Consumer Cyclical	16.38	-1.12	13.01	0.49	-0.01	-0.27	-0.28
Consumer Non-Cyclical	4.39	-1.74	3.68	2.34	0.00	-0.18	-0.18
Energy	4.17	0.78	5.31	4.26	-0.02	-0.13	-0.16
Financials	17.89	4.75	14.76	7.14	0.17	-0.40	-0.23
Healthcare	6.44	-1.99	10.56	-6.56	0.36	0.31	0.67
Industrial	19.31	2.77	17.71	1.05	-0.03	0.33	0.30
Real Estate	8.98	-6.46	6.42	-6.13	-0.21	-0.03	-0.24
Technology	8.73	2.74	14.98	9.27	-0.45	-0.54	-0.99
Utilities	3.15	-1.90	3.02	-0.39	0.02	-0.05	-0.03

Expensive technology stocks were also the biggest source of detraction in US Small.

Top/Bottom Contributors

	Portfolio Weight	Active Weight	Q4 Return	Excess Return Contribution
Top Five Contributors to Return				
GEO Group Inc	0.35%	0.31%	117.74%	0.22%
United Airlines Holdings, Inc.	0.39%	0.39%	70.17%	0.19%
Victoria's Secret & Company	0.28%	0.25%	61.17%	0.11%
CoreCivic, Inc.	0.24%	0.21%	71.86%	0.11%
Palantir Technologies Inc. Class A	0.15%	0.15%	103.31%	0.11%
Bottom Five Contributors to Return				
MicroStrategy Incorporated Class A	0.00%	-0.75%	71.78%	-0.29%
Axon Enterprise Inc	0.00%	-0.55%	48.73%	-0.20%
Astera Labs, Inc.	0.00%	-0.14%	152.82%	-0.12%
SoFi Technologies Inc	0.00%	-0.18%	95.93%	-0.11%
Robinhood Markets, Inc. Class A	0.00%	-0.23%	59.09%	-0.10%

MicroStrategy, a software firm that essentially converted itself into a Bitcoin trust, was the top detractor within the tech sector. The absence of meaningful fundamentals in the form of sales, cash flow, or dividends prevents MicroStrategy's inclusion from RAFI despite its market cap eclipsing \$80B.

Private prison companies GEO Group and CoreCivic were top contributors. The firms were cheap when entering the quarter. They rallied in anticipation of an increase in detentions following the election. The overweights to these companies will shrink as RAFI takes profits over the coming quarters.

Developed ex US Large

Sector Attribution

9/30/2024 to 12/31/2024	RAFI Fundamental High Liquidity Developed ex US Large Index		Solactive GBS Dev Markets ex US Large & Mid Cap Index		Attribution Analysis		
	Port. Average Weight	Port. Total Return	Bench. Average Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	-7.95	100.00	-7.29	-0.23	-0.43	-0.66
Basic Materials	12.36	-14.50	7.95	-14.87	-0.35	0.05	-0.30
Communications	5.67	-6.95	4.23	-6.57	0.01	-0.02	-0.01
Consumer Cyclical	11.19	-5.54	9.13	-5.60	0.04	0.02	0.06
Consumer Non-Cyclical	9.99	-9.93	9.07	-11.67	-0.04	0.18	0.14
Energy	8.99	-7.27	5.13	-6.37	0.04	-0.08	-0.04
Financials	20.06	-2.17	22.72	-1.87	-0.13	-0.06	-0.20
Healthcare	6.39	-13.64	11.17	-14.47	0.35	0.05	0.40
Industrial	12.49	-6.33	15.81	-5.62	-0.06	-0.09	-0.14
Real Estate	1.03	-12.79	2.01	-13.18	0.06	0.00	0.06
Technology	7.58	-8.46	9.63	-2.44	-0.10	-0.45	-0.55
Utilities	4.24	-12.97	3.15	-12.21	-0.05	-0.03	-0.09

Technology was the largest detractor in international developed markets as well. The materials sector was the second largest detractor. Korean firms were the biggest laggards in each.

Geographic Attribution

9/30/2024 to 12/31/2024	RAFI Fundamental High Liquidity Developed ex US Large Index		Solactive GBS Dev Markets ex US Large & Mid Cap Index		Attribution Analysis		
	Port. Average Weight	Port. Total Return	Bench. Average Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	-7.95	100.00	-7.29	0.47	-1.13	-0.66
Developed Asia Pacific x JP	7.49	-11.11	10.51	-9.36	0.06	-0.14	-0.07
Europe - Non-EU	8.64	-10.51	14.11	-13.84	0.36	0.30	0.66
European Union	27.89	-9.46	27.42	-8.99	-0.01	-0.12	-0.13
Japan	26.02	-3.74	22.19	-3.85	0.14	0.02	0.16
United Kingdom	14.81	-7.12	12.78	-6.27	0.02	-0.12	-0.10
Other Developed	8.83	-2.71	12.46	-0.98	-0.22	-0.15	-0.36
Other	6.32	-19.27	0.51	-5.78	0.11	-0.92	-0.81

“Other” is essentially synonymous with Korea for this portfolio. RAFI Indices normally treats Korea as an emerging market but classifies Korea as a developed market for this series. Korea’s inclusion was the largest source of detracting at the country/region level.

Top/Bottom Contributors

	Portfolio Weight	Active Weight	Q4 Return	Excess Return Contribution
Top Five Contributors to Return				
Novo Nordisk A/S Class B	0.24%	-1.55%	-26.42%	0.30%
ASML Holding NV	0.26%	-1.22%	-15.35%	0.11%
AstraZeneca PLC	0.33%	-0.77%	-15.66%	0.07%
Nestle S.A.	0.74%	-0.51%	-17.96%	0.06%
Panasonic Holdings Corporation	0.33%	0.22%	20.30%	0.05%
Bottom Five Contributors to Return				
Samsung Electronics Co., Ltd.	1.74%	1.74%	-22.59%	-0.29%
Shopify, Inc. Class A	0.00%	-0.60%	32.63%	-0.19%
POSCO Holdings Inc.	0.26%	0.26%	-41.51%	-0.11%
SAP SE	0.48%	-0.80%	7.26%	-0.10%
Glencore plc	0.82%	0.58%	-22.85%	-0.10%

Two Korean firms, Samsung and Posco, appear on the list of top detractors. Shopify's presence is also notable as another strong quarterly return from Canada's largest tech firm (by market cap) proved costly. Again, expensive firms were the top contributors as well. Denmark's Novo Nordisk struggled concurrent with its US counterpart in weight loss drugs, Lilly. ASML, an expensive Danish semiconductor firm also aided relative returns through a decline.

Developed ex US Small

Sector Attribution

9/30/2024 to 12/31/2024	RAFI High Liquidity Fundamental Developed ex US Small Index		Solactive GBS Dev Markets ex US Small Index		Attribution Analysis		
	Port. Average Weight	Port. Total Return	Bench. Average Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	-8.09	100.00	-8.27	-0.07	0.25	0.18
Basic Materials	11.75	-13.45	11.95	-12.83	0.02	-0.09	-0.07
Communications	5.09	-7.16	4.40	-9.56	-0.01	0.12	0.11
Consumer Cyclical	14.83	-8.36	11.02	-5.06	0.12	-0.48	-0.36
Consumer Non-Cyclical	8.48	-11.32	4.99	-11.58	-0.12	0.02	-0.10
Energy	3.02	-1.09	3.81	-6.20	-0.02	0.15	0.13
Financials	11.52	-3.12	14.46	-2.03	-0.18	-0.12	-0.29
Healthcare	5.12	-9.64	7.71	-9.32	0.03	-0.02	0.01
Industrial	22.44	-6.50	19.69	-8.50	-0.00	0.44	0.44
Real Estate	7.48	-13.25	9.63	-14.76	0.14	0.12	0.26
Technology	7.35	-4.13	9.24	-4.98	-0.06	0.06	0.00
Utilities	2.91	-7.78	3.09	-9.42	0.00	0.05	0.05

An overweight to cheap consumer stocks hurt in the quarter, as did an underweight to European financials. Conversely, inexpensive industrials, including some of the few bright spots in Korea, performed well.

Geographic Attribution

9/30/2024 to 12/31/2024	RAFI Fundamental High Liquidity Developed ex US Small Index		Solactive GBS Dev Markets ex US Small Cap Index		Attribution Analysis		
	Port. Average Weight	Port. Total Return	Bench. Average Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	-8.09	100.00	-8.27	0.64	-0.46	0.18
Developed Asia Pacific x JP	10.79	-8.88	10.11	-11.41	-0.02	0.28	0.26
Europe - Non-EU	10.45	-12.68	15.54	-10.61	0.12	-0.23	-0.11
European Union	16.13	-11.23	27.19	-9.94	0.18	-0.22	-0.04
Japan	34.97	-5.83	21.84	-5.51	0.37	-0.10	0.27
United Kingdom	8.71	-10.17	11.16	-9.40	0.03	-0.07	-0.04
Other Developed	10.12	3.29	12.60	-2.40	-0.14	0.53	0.39
Other	8.59	-14.72	0.75	-7.21	0.09	-0.66	-0.57

“Other” was dominated by poor performance in Korea. The rest of Asia (Japan, Australia, New Zealand, Hong Kong and Singapore) contributed positively. Strong performance from cheap firms in Canada and Israel led to a positive contribution from “Other Developed”.

Top/Bottom Contributors

	Portfolio Weight	Active Weight	Q4 Return	Excess Return Contribution
Top Five Contributors to Return				
VAT Group AG	0.07%	-0.32%	-25.93%	0.07%
Shopify, Inc. Class A	0.16%	0.16%	32.63%	0.05%
Veolia Environnement SA	0.00%	-0.71%	-14.79%	0.05%
Barry Callebaut AG	0.00%	-0.21%	-28.44%	0.05%
CAE Inc.	0.13%	0.13%	35.04%	0.05%
Bottom Five Contributors to Return				
Atkinsrealis Group Inc.	0.00%	-0.30%	30.40%	-0.09%
Galderma Group AG	0.00%	-0.27%	19.18%	-0.07%
Julius Baer Gruppe AG	0.00%	-0.44%	7.27%	-0.06%
DSM-Firmenich AG	0.28%	0.28%	-26.67%	-0.06%
Accor SA	0.00%	-0.32%	11.91%	-0.06%

VAT Group, an expensive Swedish supplier to semiconductor firms sold off with weakness in chips. Shopify is small in terms of sales, cash flow and dividends, but large in terms of market cap, hence the mismatch.

Mismatches for Atkinsrealis, Julius Baer, Accor had the opposite effect. Each are large in terms of company fundamentals, and small in terms of market cap, i.e. cheap. Their absence during a quarter mean reversion cost the small portfolio.

Emerging Markets

Sector Attribution

9/30/2024 to 12/31/2024	RAFI Fundamental High Liquidity Emerging Markets Index		Solactive GBS Emerging Markets Large & Mid Cap Index		Attribution Analysis		
	Port. Average Weight	Port. Total Return	Bench. Average Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	-6.67	100.00	-7.59	-0.90	1.81	0.91
Basic Materials	12.52	-16.96	7.42	-17.69	-0.55	0.11	-0.44
Communications	7.95	-9.11	10.51	-8.66	0.05	-0.05	0.00
Consumer Cyclical	8.76	-15.05	11.02	-16.13	0.20	0.12	0.32
Consumer Non-Cyclical	3.71	-7.83	4.97	-13.12	0.08	0.20	0.28
Energy	11.38	-11.44	4.77	-13.13	-0.38	0.20	-0.18
Financials	27.82	-1.09	23.51	-4.77	0.12	0.99	1.12
Healthcare	0.64	-6.12	3.43	-10.59	0.09	0.03	0.11
Industrial	3.56	-1.84	6.77	-5.02	-0.08	0.11	0.03
Real Estate	2.65	-16.11	1.70	-6.26	-0.03	-0.22	-0.25
Technology	18.15	3.09	22.77	1.18	-0.41	0.30	-0.11
Utilities	2.84	-11.58	3.14	-12.10	0.01	0.01	0.03

Financials were the biggest positive contributor, driven primarily by large overweights to Chinese banks. Materials were the lone meaningful detractor, pulled down by a poor quarter from Brazilian mining firm Vale.

Geographic Attribution

9/30/2024 to 12/31/2024	RAFI Fundamental High Liquidity Emerging Markets Index		Solactive GBS Emerging Markets Large & Mid Cap Index		Attribution Analysis		
	Port. Average Weight	Port. Total Return	Bench. Average Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	-6.67	100.00	-7.59	0.72	0.20	0.91
Brazil	9.85	-15.02	4.52	-19.73	-0.70	0.52	-0.18
China	37.71	-3.89	25.89	-7.56	0.04	1.38	1.43
Emerging Europe	2.28	-4.04	1.72	-2.75	0.02	-0.02	-0.00
India	11.28	-13.06	20.24	-10.59	0.26	-0.29	-0.03
Latin America x Brazil	3.66	-10.70	2.39	-9.59	-0.03	-0.04	-0.07
Middle East and Africa	8.54	-6.21	10.38	-2.23	-0.10	-0.33	-0.43
South Korea	--	--	9.70	-18.46	1.11	--	1.11
Southeast Asia	26.28	-4.27	24.46	-0.38	0.11	-0.96	-0.85
Other	0.39	-13.24	0.66	-0.41	-0.01	-0.06	-0.07
[Unassigned]	--	--	0.04	-14.72	0.00	--	0.00

Strong returns from China and the absence of Korea explained much of the outperformance. An underweight to expensive firms in Taiwan explained much of the underperformance from “Southeast Asia”.

Top/Bottom Five Contributors

	Portfolio Weight	Active Weight	Q4 Return	Excess Return Contribution
Top Five Contributors to Return				
China Construction Bank Corporation Class H	3.63%	2.75%	10.20%	0.46%
Samsung Electronics Co., Ltd.	0.00%	-2.27%	-22.64%	0.38%
Industrial and Commercial Bank of China Limited CI	1.96%	1.46%	12.28%	0.27%
PDD Holdings Inc. Sponsored ADR Class A	0.08%	-0.82%	-28.05%	0.19%
Bank of China Limited Class H	1.52%	1.04%	8.17%	0.15%
Bottom Five Contributors to Return				
Taiwan Semiconductor Manufacturing Co., Ltd.	5.25%	-3.94%	8.84%	-0.58%
Vale S.A.	1.84%	1.37%	-23.59%	-0.24%
Alibaba Group Holding Limited	2.89%	0.66%	-25.10%	-0.13%
Longfor Group Holdings Ltd.	0.29%	0.25%	-33.51%	-0.08%
Vibra Energia SA	0.32%	0.27%	-31.82%	-0.07%

Three large Chinese banks make the list for top contributors as these cheap firms continued their recent rally. Samsung's absence helped, as did the underweight to PDD (the expensive parent firm of online retailer Temu).

Taiwan Semi is simultaneously the largest absolute position in the RAFI portfolio... and nearly a 400bps relative underweight. TSMC is a big company trading at a big multiple. Holding "only" 5.25% in the company cost 58bps of relative return in the quarter. Value entered the quarter priced inexpensively and only became cheaper.

Global Real Estate

Geographic Attribution

9/30/2024 to 12/31/2024	RAFI Fundamental High Liquidity Global Real Estate Index		iShares Tr. - Global REIT ETF		Attribution Analysis		
	Port. Average Weight	Port. Total Return	Bench. Average Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	-9.93	100.00	-8.94	-1.01	0.02	-0.99
Developed Asia Pacific	21.54	-11.91	15.70	-14.23	-0.32	0.54	0.22
Developed Europe	8.69	-16.48	7.33	-19.52	-0.14	0.29	0.15
Emerging Americas	0.48	-16.38	0.49	-13.00	-0.00	-0.02	-0.02
Emerging Asia	13.74	-19.91	0.63	-8.52	0.10	-1.66	-1.56
Emerging EMEA	2.46	13.72	0.65	-5.99	0.05	0.45	0.51
Other Developed	2.84	-12.65	2.14	-19.98	-0.07	0.22	0.15
United States	50.25	-5.79	73.04	-6.19	-0.64	0.19	-0.45

The RAFI portfolio’s large weight to China driven by its flexibility to invest in real estate development firms, in addition to the REITs found in the benchmark, continued to drive a large overweight to “Emerging Asia”. Unfortunately, Chinese developers had a poor quarter.

Top/Bottom 5 Contributors

	Portfolio Weight	Active Weight	Q4 Return	Excess Return Contribution
Top Five Contributors to Return				
Emaar Properties	0.89%	0.89%	47.36%	0.44%
Prologis, Inc.	1.44%	-5.13%	-15.56%	0.36%
CBRE Group, Inc. Class A	2.58%	2.58%	5.47%	0.34%
GEO Group Inc	0.29%	0.29%	117.74%	0.22%
Public Storage	1.08%	-2.16%	-16.93%	0.18%
Bottom Five Contributors to Return				
Equinix, Inc.	1.71%	-3.70%	6.73%	-0.53%
Digital Realty Trust, Inc.	1.64%	-1.92%	10.30%	-0.32%
Longfor Group Holdings Ltd.	1.06%	1.06%	-33.51%	-0.31%
American Tower Corporation	2.38%	2.38%	-19.85%	-0.28%
New World Development Co. Ltd.	0.57%	0.57%	-46.53%	-0.27%

Similar to Microsoft in US Large, and Taiwan Semi in EM, Equinix and Digital Realty were simultaneously top holdings in the RAFI portfolio and large underweights relative to a cap-weighted benchmark that is highly concentrated today. (iShares REET ETF currently has more than 38% of its portfolio allocated to its top 10 holdings. RAFI Global Real Estate’s top 10 represents less than 20%.) Strong returns from these large underweights proved costly during the quarter.

Important Information

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